ABSTRACT

The object of the invention is to inhibit the axial displacement caused by the insufficiency of a control response angular frequency of a frequency arithmetic unit of a synchronous motor and realize high-precision torque control also in acceleration/deceleration. To achieve the object, the axial displacement of the synchronous motor caused by the insufficiency of the control response angular frequency of the frequency arithmetic unit is estimated in consideration of the control response angular frequency and input $\Delta\theta c3$ (= $\Delta\theta c1 + \Delta\theta c2$) including an estimated value $\Delta\theta c2$ in addition to an axial displacement operated value $\Delta\theta c1$ to the frequency arithmetic unit is acquired. Hereby, even if the frequency arithmetic unit has an insufficient control response angular frequency, the quantity of axial displacement which will be caused by the insufficiency is estimated as a second axial displacement signal $\Delta\theta c2$, is added and input. Therefore, actual axial displacement $\Delta\theta c1$ of the synchronous motor is stable at a value substantially close to zero.